1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

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LETTER DATED 10 APRIL 1995 FROM THE DEPUTY DIRECTOR OF THE UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY ADDRESSED TO THE PROVISIONAL SECRETARY-GENERAL OF THE 1995 REVIEW AND EXTENSION CONFERENCE OF THE PARTIES TO THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

To assist the work of the upcoming 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons I enclose a copy of the paper entitled "United States information pertaining to the Treaty on the Non-Proliferation of Nuclear Weapons". We hope this information will contribute to the work of the Review and Extension Conference, and we would be grateful if the information paper could be circulated as a document of the Conference.

(Signed) Ralph EARLE II
Deputy Director
United States Arms Control
and Disarmament Agency

Annex*

UNITED STATES INFORMATION PERTAINING TO THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

1995

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entered into force on March 5, 1970. At that time the NPT had 45 parties. As of publication of this paper, 173 states are party to the Treaty, giving it the broadest support of any arms control agreement in history.

The NPT is the only internationally binding agreement that provides on a global basis a barrier to the spread of nuclear weapons. The operative articles of the Treaty reflect three principal objectives:

-- to stop the further spread of nuclear weapons,

- to provide a sound basis for international operation in the peaceful uses of nuclear energy,

-- to commit all parties to undertake negotiations in good faith on nuclear and non-nuclear arms control.

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* The present text has been reproduced as received, without formal editing.

I. PREVENTING THE FURTHER SPREAD OF NUCLEAR WEAPONS

Articles I and II of the NPT seek to prevent the further spread of nuclear weapons, thereby strengthening the security of all states. Under Article I the nuclear weapon states pledge not to transfer nuclear explosives to any other state and not in any way to assist non-nuclear weapon states to manufacture or otherwise acquire such devices. Under Article II 166 non-nuclear weapon states pledge not to acquire nuclear explosive devices or to seek or receive assistance in the manufacture of nuclear explosives.

Article III requires the non-nuclear weapon states parties to accept International Atomic Energy Agency safeguards on all of their peaceful nuclear facilities. These safeguards, called fullscope safeguards, provide necessary assurance that nuclear materials in non-nuclear weapon states are not diverted from peaceful purposes to the manufacture of nuclear explosives. Confidence in nonproliferation assurances, reinforced by IAEA safeguards, is a necessary condition for peaceful nuclear cooperation as enumerated in Article IV of the Treaty.

Article I: The Non-Proliferation Commitment

The United States has not transferred nuclear weapons; nor has the United States assisted or encouraged any non-nuclear weapon state to manufacture or otherwise acquire nuclear explosive devices. United States law, policy, and regulations are intended to prevent anyone in the public or private sectors from transferring nuclear explosive devices to any state or assisting any non-nuclear weapon state to build or acquire a nuclear explosive device.

The United States has established and implemented a comprehensive system of export controls for both nuclear and dual-use items and technology that could be used for nuclear explosive purposes. This system of export controls is designed to ensure US compliance with obligations under Article I of the NPT.

Article II: The Commitment Not to Acquire Nuclear Weapons

The United States has fully supported several important actions taken by the international community to enforce compliance with the obligation of non-nuclear weapon states party to the NPT not to acquire nuclear weapons. These actions include: United Nations Security Council Resolution 687 of April 3, 1991; the January 31, 1992 statement of the President

of the Security Council, following the conclusion of the first Security Council summit meeting; the request by the IAEA Board of Governors for special safeguards inspections in the Democratic Peoples Republic of Korea in 1993; and Security Council responses to the report by the Director General of the IAEA regarding DPRK's noncompliance with the request for special inspections.

UNSC Resolution 687(1991) requests the IAEA to carry out extensive inspections of Iraq's declared nuclear facilities as well as others designated by the Special Commission (UNSCOM).

Prime Minister John Major of the United Kingdom, acting as President of the Security Council, issued a statement on January 31, 1992 on behalf of the heads of state participating in the Security Council Summit meeting. The statement includes the following: "On nuclear proliferation, they note the importance of the decision of many countries to adhere to the Non-Proliferation Treaty and emphasize the integral role in the implementation of that Treaty of fully effective IAEA safeguards, as well as the importance of effective export controls. The members of the Council will take appropriate measures in the case of violations notified to them by the IAEA."

In UNSC Resolution 825(1993) the Security Council called on the DPRK to honor fully its safeguards agreement with the IAEA. In the Agreed Framework between the United States of America and the Democratic People's Republic of Korea, October 21, 1994, the United States and the DPRK agreed on measures to resolve the nuclear issue on the Korean Peninsula.

Article III: IAEA Safeguards and Nuclear Exports

A. IAEA Safeguards

IAEA safeguards accomplishments and challenges

Pursuant to Article III, the IAEA applies comprehensive safeguards to ensure that nuclear material in non-nuclear weapon state parties is used solely for non-explosive purposes. This system has demonstrated its value and effectiveness through 25 years of experience in support of the NPT. By providing a high degree of confidence that nuclear material is used only for non-explosive purposes, the IAEA safeguards system provides an indispensable basis for nuclear cooperation.

This essential accomplishment of IAEA safeguards has been recognized by previous NPT Conferences, for example, the

conviction expressed by the Third Review Conference that "IAEA safeguards provides assurance that states are complying with their undertakings and assist states in demonstrating this compliance." This is clearly the case when IAEA safeguards are provided adequate resources and support, as demonstrated by the sustained high level of effectiveness achieved through inspection goal attainment for unirradiated direct-use material (plutonium and highly enriched uranium).

The record of 25 years of safeguards in support of the NPT has demonstrated that the vast majority of NPT parties faithfully fulfill their non-proliferation commitments. Nonetheless, the Conference (Main Committee II at the Fourth Review Conference) correctly recognized that questions could arise about compliance with the non-proliferation undertakings and urged the IAEA in such situations to make full use of its rights for special inspections. Since the 1990 NPT Review Conference, the IAEA has found two states, Iraq and North Korea, to be in non-compliance with their safeguards agreements concluded under Article III of the NPT. In the case of Iraq, safeguards violations resulted both from undeclared activities at a declared location and from clandestine activities at separate locations that should have been declared to the IAEA and placed under safeguards but were not. These events have given rise to an extensive IAEA reexamination of means to strengthen the NPT safeguards system, particularly ways to detect undeclared activities.

Recent years have seen considerable expansion in the number and scope of facilities and quantities of nuclear material subject to IAEA safeguards under the NPT (100 safeguards agreements with non-nuclear weapon state parties, including 47 having significant nuclear activities, at the end of 1993 compared to 86 agreements, including 42 with states having significant nuclear activities, at the end of 1990). Implementation of NPT safeguards in several states with pre-existing nuclear programs (such as North Korea, South Africa, and Kazahkstan) and the need to verify the accuracy and completeness of such states' initial nuclear material inventories have posed a particular challenge to the IAEA. The dissolution of the Soviet Union has provided the further challenge of additional sophisticated nuclear facilities becoming subject to safeguards without an increase in the financial resources available to the IAEA.

These challenges occurred in the midst of a period of zero-real-growth budgets which began in the early 1980s but which has seen increases in the scope and complexity of IAEA safeguards. In 1993 the IAEA carried out over 2000 inspections at 1022 installations that were under safeguards or contained safeguarded materials, including a wide variety of advanced facilities such as enrichment plants, reprocessing plants, and mixed oxide fuel fabrication facilities.

The IAEA is responding to these challenges in a variety of ways, including:

- greater cooperation and assistance by member states to enable the IAEA to implement safeguards effectively and efficiently, including introduction of advanced safeguards techniques and instrumentation (with the New Partnership Approach with EURATOM of particular note);

- greater dependence on Member States Support Programs (MSSP) and other extrabudgetary contributions to carry out long-term research and development and to acquire equipment and personnel (in the form of cost free experts) which cannot be otherwise obtained due to shortfalls in the regular budget; and

- initiation of Programme 93+2 to investigate means to further increase efficiency and effect cost-savings and to strengthen the IAEA's capability to detect nuclear activities which should be subject to safeguards but which have not been declared.

The responsiveness of the IAEA to the instances and risks of undeclared nuclear activities provides confidence that the IAEA safeguards system can successfully meet these challenges. The steps already taken, through such measures as verification of the completeness of initial reports, the introduction of new techniques such as environmental monitoring, arrangements for early provision of information on new facilities and full use of all available information, show what can be accomplished with support by the member states. We are impressed by the work to date under Programme 93+2 and believe that the IAEA safeguards system can and will be strengthened to be able to provide meaningful assurance not only regarding the non-diversion of declared nuclear material but also regarding the obligation to declare all nuclear material in all peaceful nuclear activities.

United States support of IAEA safeguards

The United States has consistently been a strong and active supporter of IAEA safeguards, providing extensive political, financial, and technical assistance. In 1977 the U.S. established the first Member State Support Program for IAEA safeguards, and the U.S. continues to be the largest single source of extrabudgetary funding and support for the IAEA Department of Safeguards. Since 1990, the U.S. has voluntarily contributed over $40 million to IAEA safeguards, with a total voluntary contribution of over $90 million since 1977. Since the last NPT Conference, during the years 1991

through 1994, the United States provided an average funding of $7.6 million annually for its Program for Technical Assistance to IAEA Safeguards (POTAS). The major contribution of POTAS was the provision of cost-free-experts (CFEs) for which about 46% of the support was expended. During the past five years the U.S. has provided the equivalent of an average of 25 full-time CFEs per year to the IAEA. Other significant support was provided in areas of equipment (26%) and techniques and procedures (13%).

In addition to POTAS, the U.S. Support Program (USSP) includes the Department of Energy International Safeguards Program and technical support activities of the Department of State, Department of Defense, the Nuclear Regulatory Commission and the Arms Control and Disarmament Agency.

The USSP has contributed in many ways to the development and implementation of IAEA safeguards, including research and development on equipment, instrumentation and safeguards approaches; system studies; staff and inspector training; information systems development; and procurement, maintenance, and deployment support. The U.S. also provides technical experts loaned to the IAEA without charge. In addition, in the last several years the USSP has played a particularly important role in meeting IAEA requests for special technical assistance related to verification of initial inventory reports. The U.S. has also made significant financial contributions to the replacement of obsolete safeguards equipment and the introduction of new surveillance equipment.

Since 1993, the USSP has been particularly active in supporting IAEA Programme 93+2 requirements, especially its aspects related to Task 2 (assessment of potential cost saving measures); Task 3 (environmental monitoring for safeguards); Task 5 (improved analysis of information on states' nuclear activities); and Task 6 (enhanced safeguards training). The activities of the U.S. Support Program are described in greater detail in Appendix A of this paper.

IAEA safeguards in the U.S.

In 1980, the United States concluded a voluntary offer safeguards agreement with the IAEA. Under this agreement, the IAEA has the right to apply safeguards to all nuclear material in all U.S. nuclear facilities, excluding only those associated with activities having direct national security significance. The list of eligible facilities provided to the IAEA includes some 240 private and government-owned nuclear facilities. Since 1980, the IAEA has applied safeguards in the U.S. at the five power reactor fuel fabrication facilities, six power reactors and two storage sites. Furthermore, under a protocol to the agreement, all U.S. commercial fuel fabrication

facilities provide reporting of their nuclear materials inventory on the same basis as if they were selected for safeguards inspections.

By submitting U.S. facilities to IAEA safeguards, the United States has sought to encourage wider acceptance of the NPT by demonstrating that NPT adherence and acceptance of IAEA safeguards are not impediments to commercial nuclear activities.

In September 1993, President Clinton announced that the U.S. would subject to IAEA inspections under the U.S./IAEA safeguards agreement fissile materials in excess of U.S. defense needs. The purposes of this offer are to provide assurance to the international community regarding the irreversibility of the nuclear disarmament process, to provide a concrete demonstration that the U.S. is fulfilling its commitments under Article VI of the NPT, and to show U.S. willingness to expand the scope of IAEA safeguards in the U.S. This offer is also meant to encourage other nuclear weapon states to follow suit and to provide further impetus for the expansion of IAEA safeguards worldwide.

To fulfill this offer, the U.S. is adding several facilities to the list of U.S. facilities eligible for the application of IAEA safeguards. The first such facility is a storage vault at the Oak Ridge Y-12 Plant which contains highly enriched uranium that was formerly part of the U.S. defense program. IAEA safeguards on this material commenced in September 1994. The design information verification and initial inventory verification at the Y-12 plant were completed in September 1994. Subsequently, the United States placed the Hanford plutonium storage vault at the Hanford Reservation in the State of Washington under IAEA safeguards. The IAEA completed its initial inventory of the excess plutonium at this facility in December 1994. The United States plans to add the plutonium storage vault at the Rocky Flats Plant near Golden, Colorado to the list in the near future, with IAEA inspections beginning in the first half of 1995.

Transparency of U.S. nuclear defense activities

The United States has also taken other steps to increase significantly the transparency of its nuclear defense activities. In briefings during December 1993 and June 1994, Secretary of Energy O'Leary disclosed the total amount of plutonium and highly enriched uranium produced by the U.S. for defense purposes between 1945 and 1991, as well as locations and site specific inventories. In addition, Secretary O'Leary and Russian Minister of Atomic Energy Mikhailov agreed in March 1994 to begin exchange visits aimed at increased transparency in the nuclear disarmament process. The first step in this

process was reciprocal familiarization visits which took place in July 1994 at Rocky Flats in the U.S. and in August 1994 at Seversk in Russia. The objective of these visits was to demonstrate measures for confirming that containers stored at those facilities contained plutonium removed from nuclear weapons.

In addition, at the Summit meeting on January 14, 1994, Presidents Yeltsin and Clinton issued a joint statement on the non-proliferation of weapons of mass destruction and the means of their delivery and agreed that the two countries would establish a working group to consider:

- including in their voluntary IAEA safeguards offers all source and special fissionable materials, excluding only those nuclear materials and facilities associated with activities having direct national security significance; and

- steps to ensure transparency and irreversibility of the process of reduction of nuclear weapons, including the possibility of putting a portion of fissionable material under IAEA safeguards, with particular attention given to materials released in the process of nuclear disarmament and steps to ensure that these materials would not be used again for nuclear weapons.

An initial meeting of the working group called for in the joint statement was held in Moscow in May 1994, and agreement was reached on initial steps to carry out the work called for in the joint statement.

At the September 28, 1994 Summit meeting the two Presidents agreed to work together to develop broad bilateral and multilateral cooperation on assuring nuclear security, including:

- preventing illegal trade in nuclear materials and strengthening the regime of control and physical protection of such materials;

- exchanging information on stocks of fissile materials and on their safety and security; and

- improving confidence in and increasing the transparency and irreversibility of the process of reducing nuclear weapons.

As a result of these Summit meetings. a joint U.S.-Russian Safeguards, Transparency and Irreversibility (ST&I) Group was formed to pursue initiatives aimed at achieving these broad objectives.

Safeguards financing

The cost of implementing safeguards is a very small fraction of the overall operating costs of nuclear facilities. All member states contribute to the IAEA safeguards budget, which accounts for approximately a third of the total IAEA budget. Under a special safeguards financing formula, due to expire in 1995, most member states are shielded from increases in the safeguards budget.

Since the early 1980s the IAEA has carried out its functions under essentially zero-real-growth budgets. The IAEA has been able to do so while improving both the quality and scope of safeguards implementation and to meet the new challenges described earlier, through greater efficiency in resource allocation, by reducing or eliminating lower priority programs, and by increasing dependence on voluntary contributions for technical development, equipment, and support personnel. The United States has encouraged and continues to encourage such improvements in efficiency. Where the United States has identified, on a case-by-case basis, acute funding shortfalls for specific activities, it has made extrabudgetary financial contributions to enable IAEA to fulfill required tasks. However, this short-term, interim measure does not facilitate effective or efficient medium-to long-term program planning and implementation by the IAEA. As the IAEA's 1996 budget leaves several important safeguards activities unfunded, it is clear the IAEA has reached the point where additional efficiencies are not by themselves sufficient to permit applying safeguards to additional facilities and strengthening the safeguards system to detect undeclared activities, while maintaining overall safeguards effectiveness for declared materials.

B. Nuclear Exports and NPT Article III.2

The United States continues to support strongly the work of the NPT Exporters Committee, known as the Zangger Committee, in its efforts to develop and apply a consistent interpretation of Article III.2 of the NPT, which calls for the application of IAEA safeguards on nuclear exports to non-nuclear weapon states. The Zangger Committee helps to ensure that NPT supplier nations apply uniform rules for international nuclear trade and that all assistance to nuclear activities in non-nuclear weapon states is provided under appropriate safeguards and other nonproliferation conditions. We encourage all NPT parties to support the work of this Committee.

The United States believes the Zangger Committee should continue to keep its trigger list under review to take into account advances in nuclear technology and other developments

which may have proliferation significance. We encourage Committee members to consider ways to strengthen further the implementation of NPT Article III.2, including expanding Committee membership to include all major NPT nuclear supplier countries.

Major steps have been taken by supplier countries since the 1990 Review Conference to harmonize international trade in nuclear-related commodities and technology and to enhance the ability of supplier countries to attain their mutually shared nonproliferation objectives. The 30 members of the Nuclear Supplier Group (NSG) have adopted a policy of requiring fullscope safeguards as a condition for nuclear supply; have implemented export controls on significant nuclear-related dual-use items and technology; and have agreed not to transfer nuclear or nuclear-related items to any country unless they are satisfied that the transfers would not contribute to the proliferation of nuclear weapons or other nuclear explosive devices.

The United States urges all NPT parties which are current or potential nuclear suppliers to adhere to the NSG Guidelines (INFCIRC/254/Parts 1 and 2) and to incorporate into their domestic export control regulations the principles and conditions of supply contained in these Guidelines.

Article VII: Regional Arrangements

Article VII of the NPT states: "Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories."

Pursuant to Article VII and in accordance with its overall non-proliferation policy, the United States believes that the creation of nuclear weapons free zones, under appropriate conditions, can contribute to regional and global security. These conditions include:

--- the initiative for the creation of the nuclear weapons free zones comes from the states in the region concerned;

--- all states whose participation is deemed important participate in the zone;

--- the zone arrangement provides for adequate verification of compliance with the zone's provisions;

--- the establishment of the zone does not disturb existing security arrangements to the detriment of regional and international security;

--- the zone arrangement effectively prohibits the parties from developing or otherwise processing any nuclear explosive devices for whatever purpose;

--- the zone arrangement does not seek to impose restrictions on the exercise of rights recognized under international law, particularly the principle of freedom of navigation on the high seas, in international air space, and in straits used for international navigation and the right of innocent passage through territorial seas; and

--- the establishment of the zone does not affect the existing rights of its parties under international law to grant or deny transit privileges, including port calls and overflights, to other states.

Latin American Nuclear Weapons Free Zone

The United States strongly supports the Treaty of Tlatelolco, which establishes Latin America as a nuclear weapons free zone. The United States has signed and ratified both Protocols to this Treaty, thereby pledging not to store or deploy nuclear weapons in territories within the zone for which the United States is internationally responsible, and not to use or threaten to use nuclear weapons against the Latin American states for whom the Treaty is in effect, and not to store, install, or deploy nuclear weapons in the territory of any such state. Pursuant to US obligations under Protocol I, the U.S.-IAEA agreement on safeguards in connection with the Treaty of Tlatelolco was signed and entered into force in 1989.

The United States takes very seriously its obligations under the two Protocols to the Treaty of Tlatelolco. It also encourages all eligible states that have not done so to take the steps necessary to bring the Treaty fully into force.

South Pacific Nuclear Free Zone

The Treaty of Rarotonga, which entered into force in 1986, establishes the South Pacific Nuclear Free Zone (SPNFZ). The United States is currently reviewing its position on SPNFZ in the context of its nonproliferation policy; however, U.S. activities in the region are not inconsistent with the Treaty's provisions.

Antarctic

The Antarctic Treaty of 1959 establishes an international regime for excluding nuclear explosive devices from the continent of the Antarctic. The United States continues to conduct all of its activities in the Antarctic in complete compliance with the terms of the Treaty.

Other Areas

The United States has supported proposals to establish effective nuclear weapons free zones in Africa, the Middle East, Southeast Asia, and South Asia.

Article IX: Adherence

The United States has a long-standing policy of strongly encouraging all countries to join the NPT and, accordingly, has actively promoted additional adherence to the Treaty. Since the Fourth Review Conference in 1990 37 states have acceded to the Treaty. These states include the following: Albania, Algeria, Argentina, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, People's Republic of China, Croatia, Czech Republic, Eritrea, Estonia, France, Georgia, Guyana, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Republic of Marshall Islands, Mauritania, Moldova, Monaco, Mozambique, Myanmar, Namibia, Niger, St. Kitts and Nevis, Slovakia, Slovenia, South Africa, Tanzania, Turkmenistan, Ukraine, Uzbekistan, Zambia, and Zimbabwe.

II. FOSTERING THE PEACEFUL USES OF NUCLEAR ENERGY

Article IV: Nuclear Energy for Peaceful Purposes

Introduction

All NPT parties have the inalienable right to research, develop, produce, and use nuclear energy for peaceful purposes as stated in Article IV of the Treaty. Article IV further calls upon all parties to "facilitate... the fullest possible exchange of equipment, materials, and scientific and technological information" for such purposes. Finally Article IV calls for the development of applications for peaceful nuclear energy, especially in non-nuclear weapon states and with "due consideration to the developing areas of the world."

Peaceful Uses of Nuclear Energy and Nuclear Technology

The varied adaptations of nuclear technology have made significant contributions toward an improved quality of life in many nations.

There are over 420 nuclear power reactors worldwide with a capacity of approximately 330 GW(E). Also, there are 97 nuclear power reactors under construction with an additional 60 GW(E). Much of this commitment to nuclear power is centered in the most industrialized countries, but other NPT countries such as Bulgaria, Hungary, Republic of Korea, and Mexico are also producing electricity from nuclear reactors. Still others, such as Egypt, Indonesia, and Romania are continuing to move toward the use of nuclear power. Worldwide, in 1993, 22.4% of total electricity generation was produced by nuclear power plants.

Research reactors make significant contributions to scientific and technological development and provide access to many benefits of nuclear technology. There are currently over 320 research reactors worldwide. More than 80 developing countries, party to the NPT, have acquired research reactors (27 were provided by the United States). Other parties are establishing nuclear scientific infrastructures to apply nuclear technologies to meet national development programs.

Nuclear and isotopic techniques have been used to study natural processes since the late 1940s. These techniques have been applied to the development of analytical tools, including tracer methods in medicine, neutron activation analysis, x-ray fluorescence, and atomic absorption spectrometry. They have been used to study environmental pollutants, to solve human

health problems (such as cancer), to assist in accessing water and mineral resources, to help preserve food, and to improve the quality and reliability of agricultural and manufactured products.

U.S. Cooperation: NPT Preference

The NPT creates an irreplaceable framework for expanding peaceful nuclear cooperation and provides assurances that NPT states will devote their nuclear programs exclusively to peaceful purposes. Because of these assurances, NPT parties receive special consideration and benefits in nuclear cooperation. The United States has long had a policy to ensure that NPT states receive the most favorable treatment possible as they pursue the peaceful benefits of nuclear energy. Other nuclear suppliers have now taken a comparable stance by making acceptance of safeguards on all nuclear activities, fullscope safeguards, a condition for nuclear cooperation. The acceptance of IAEA safeguards by NPT parties removes obstacles to nuclear cooperation. This policy ensures, moreover, that states outside of the NPT, or other comparable agreements, without fullscope safeguards will not benefit from nuclear cooperation and trade on terms as favorable as those accorded to NPT parties.

Since 1978 all new or amended Agreements for Cooperation with non-nuclear weapon states entered into by the United States have been with parties to the NPT or the Treaty of Tlatelolco.

U.S. has Agreements for Cooperation with EURATOM and with the following individual NPT or Tlatelolco parties:

Argentina	Egypt	Philippines
Australia	Finland	Poland
Austria	Hungary	Portugal
Bangladesh	Indonesia	Slovakia
Brazil	Japan	South Africa
Canada	Korea, Republic of	Spain
Czech Republic	Morocco	Sweden
China	Norway	Switzerland
Colombia	Peru	Thailand

In 1990-1994, all U.S. exports of enriched uranium (totalling almost 6,258 tonnes) were to NPT parties.

The following countries have sister laboratory agreements with the United States: Mexico, Peru, Morocco, and Egypt. Agreements with Ghana, Malaysia and Thailand are being finalized, and others are being considered. When all the sister laboratory agreements are completed, the U.S. will have committed nearly $1 million to NPT parties or parties to the Treaty of Tlatelolco through this program.

Nuclear cooperation projects and assistance are tailored to particular countries' needs. The IAEA's technical assistance and cooperation programs focus primarily on projects and activities carried out by individual member states. These programs have been instrumental for states, particularly developing NPT countries, that seek to derive the benefits of nuclear energy in the fields of physical and chemical sciences, food and agriculture, industry and earth science, human health, radiation protection, nuclear power, safety of nuclear installations, nuclear fuel cycle, and radioactive waste management.

The United States has supported the following number of IAEA Technical Cooperation Projects in the following regions:

Latin America:	1124
Asia/Pacific:	1042
Africa:	851
Europe/Middle East:	732

The United States understands that many developing countries view technical assistance as the major benefit of NPT adherence. At the same time, there are valid concerns in these states that the growing safeguards demands on the IAEA not undercut either the budgetary or technical commitment to these cooperative programs. The United States supports the maintenance of an appropriate balance between safeguards and technical cooperation by providing support to improve the efficiency of safeguards and by supporting IAEA technical cooperation projects with financial and "in-kind" contributions.

The United States supports the Agency's technical cooperation activities in two principal ways. One is through contributions to the Technical Assistance and Cooperation Fund (TACF), the main fund for financing the Agency's "hardcore" technical cooperation activities. By longstanding practice, donor countries pledge voluntary cash contributions to the TACF at approximately the same percentage as their base rate to the IAEA regular budget. For the U.S., this rate is about 25% -

one which this country has continued to meet over the years. U.S. support to the TACF has been substantial, with over $79 million in contributions between 1958 and 1989. The U.S. contribution from the years 1990 through 1994 alone exceeded $60 million.

The United States customarily goes beyond these cash contributions to the TACF by providing additional voluntary support to a wide variety of Agency activities. These "extrabudgetary" contributions include the provision of experts, training, fellowships, and equipment necessary to implement specific projects. These projects (designated "Footnote A") have been judged technically worthwhile by the Agency, but cannot be funded from contributions to the TACF in a given year. U.S. voluntary assistance also includes sponsorship of an annual series of training courses held at Argonne National Laboratory; the provision of cost-free experts to the IAEA headquarters in Vienna for up to two years; and fellowships granted to outstanding foreign students and professionals to train in nuclear-related fields at leading U.S. institutions.

For the period 1990-1994, the U.S. funded Footnote A projects totaling $8 million. All of the recipient states are NPT adherents. Countries receiving Footnote A funding from the U.S. since 1990 include:

Bangladesh
Bolivia
Bulgaria
Cameroon
Colombia
Cote D'Ivoire
Ecuador
Egypt
El Salvador
Ghana
Greece
Guatemala
Hungary
Indonesia
Jamaica
Kenya
Korea, Republic of
Malaysia
Mexico
Morocco
Nigeria
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Romania
Slovakia
Sri Lanka
Tanzania
Thailand
Uruguay
Venezuela
Zimbabwe

In addition to supporting projects in specific countries, the U.S. has also supported interregional projects and regional projects through the IAEA.

Model projects address major needs and have been designed and selected to result in significant lasting impact to the end users. Unlike Footnote A projects for which hardcore funding is not available, Model projects receive both hardcore and extrabudgetary funding. An example of a Model project that the U.S. has selected to support in 1994 is the establishment of a

National Radiotherapy and Nuclear Medicine Network in Ghana. The U.S. is also supporting Model projects that will upgrade radiation protection infrastructures and improve radioactive waste management.

The United States has supported outstanding students from many countries to come to study in the U.S. through the IAEA fellowship program. In cases where the training is in connection with a U.S. supported Footnote A or Model Project the United States provides the administrative support necessary to place fellows and also provides stipends and travel expenses. Since 1990 over $7.6 million has been invested to support the effort, with participants from the following countries:

Bangladesh	Indonesia	Romania
Bolivia	Jordan	Saudi Arabia
Bulgaria	Kenya	Senegal
China	Republic of Korea	Sri Lanka
Colombia	Malaysia	Sudan
Costa Rica	Mali	Syria
Cyprus	Mauritius	Tanzania
Czech Republic	Mexico	Thailand
Dominican Republic	Mongolia	Turkey
Ecuador	Morocco	Uganda
Egypt	Nigeria	Ukraine
El Salvador	Panama	Uruguay
Ethiopia	Peru	Venezuela
Ghana	Philippines	Zaire
Greece	Poland	Zambia
Guatemala	Portugal	Zimbabwe
Hungary		

Extrabudgetary funds also pay for experts to work at IAEA headquarters in Vienna, for U.S.-hosted interregional training courses, and for cooperative research programs through the IAEA.

For the last fourteen years all recipients of the annual U.S. gifts of special nuclear material to the IAEA have been NPT parties. For the period 1990-1994 the U.S. has provided $100,000 worth of nuclear material. A total of over $1.4 million has been given to the IAEA for designated NPT members since 1970. These countries include:

Austria
Colombia
Finland
Greece
Indonesia
Iran
Malaysia
Mexico
Morocco
Norway
Philippines
Romania
Spain
Thailand
Turkey
Uruguay
Venezuela
Vietnam
Zaire

NPT Parties have also been the beneficiaries of other efforts to share U.S. nuclear technology, expertise, and experience, including:

PhD training of almost 4,000 foreign nationals from more than 80 other NPT countries in nuclear physics, nuclear chemistry and nuclear engineering between 1974 and 1995.

Certification of medical doctors in NPT countries, from all regions of the world, in nuclear medicine by the American Board of Nuclear Medicine; attendance by others at the FAO/IAEA special training course on the use of radioisotopes and radiation in entymology. (The total number of certifications issued over the life of the NPT is 764 from 74 countries.)

The U.S. Nuclear Regulatory Commission (NRC) and Department of Energy (DOE) have further assisted NPT parties in peaceful nuclear development by performing technical training missions overseas and hosting foreign visitors at DOE and NRC facilities. During the past two decades, the NRC has received nearly 300 foreign assignees and visitors. Since 1980, over 200 NRC staff members have traveled to developing countries on technical assistance missions, offering their support on nuclear regulatory and safety matters. Since 1986, nearly 54,000 scientists and engineers from numerous developing countries party to the NPT have visited DOE facilities to receive training in the peaceful uses of nuclear energy, and over 45,000 DOE specialists have performed technical assistance missions overseas. Students from countries party to the NPT received training at IAEA courses held at various Department of Energy laboratories between 1990-1995. The costs of these courses were funded by the United States.

Preferences in Policy and Law

The U.S. exercises considerable discretion in the expenditure of its extrabudgetary contributions to the IAEA and gives preferential treatment in the allocation of these resources, including selection of participants, to states party to the NPT or that have undertaken comparable nonproliferation commitments, for example, through adherence to the Treaty of Tlatelolco.

U.S. preference for NPT parties and other countries with fullscope safeguards is also reflected in U.S. policy, law, regulations, and practice concerning commercial supply.

The U.S. Atomic Energy Act, as amended by the Nuclear Non-Proliferation Act (NNPA) of 1978, requires states to have all of their peaceful nuclear facilities under IAEA safeguards (fullscope safeguards) in order to receive U.S. exports of fissionable materials, reactors, and major reactor components. The NNPA further requires fullscope safeguards as a condition in any new or amended agreements for cooperation with non-nuclear weapon states. Therefore, all new or amended Agreements for Cooperation in the peaceful uses of atomic energy entered into by the United States with non-nuclear weapon states since 1978 have been with states that are parties to the NPT and/or the Treaty of Tlatalelco.

To provide greater assurances of supply, the ceilings on low enriched uranium transfers under U.S. Agreements for Cooperation have been removed legislatively for NPT parties. This permits the timely and efficient supply of additional power reactor fuel to NPT parties.

Special preferences in the licensing of nuclear-related exports have been made for NPT parties and other states having IAEA safeguards on their entire civil nuclear programs. For example:

As a policy matter, expedited consideration is given for the export of so-called nuclear-related "dual-use" equipment and technology.

NPT parties have been designated by the Nuclear Regulatory Commission (NRC) as eligible to receive exports of nuclear reactor components under a general license (thus eliminating the need to apply for a specific license for each export).

The NRC has issued general licenses for the export of limited quantities of nuclear material to NPT parties.

The Department of Energy (DOE) takes the NPT status of recipient countries into consideration in authorizing exports of nuclear technology, services, and equipment governed by its regulations.

NPT parties benefit from a DOE general authorization that permits the transfer of non-public, unclassified nuclear technology in fields ranging from mining, milling, and fuel fabrication to reactor design, construction and operation.

In crucial areas of financing, U.S laws governing participation in international financial institutions instruct the U.S. representative to consider whether the recipient is a party to the NPT.

This record reflects the continued strong U.S. commitment to fulfill its obligations under Article IV of the NPT. The record is consonant with the spirit and vision that parties to the Treaty should obtain advantages over non-parties.

Article V: Nuclear Explosions for Peaceful Purposes (PNEs)

Article V of the NPT provides that under appropriate international observation and through appropriate international procedures the potential benefits from peaceful applications of nuclear explosions will be made available to NPT non-nuclear weapon states on a non-discriminatory basis. The United States has determined that PNEs are not technically or economically worthwhile undertakings, and, in addition, regards such explosions as indistinguishable from military tests. Since 1973 the United States has not conducted any PNEs.

III. NEGOTIATIONS IN GOOD FAITH ON NUCLEAR AND NON-NUCLEAR ARMS CONTROL

Article VI: Ending the Nuclear Arms Race, Disarmament

The NPT is an important factor in efforts to reach arms control agreements, in two ways. First, the NPT serves as a legal barrier to the spread of nuclear weapons. As such, it is a critical element in sustaining arms control progress. Second, according to Article VI of the Treaty, each of the parties to the Treaty "undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control."

The United States attaches great importance to its obligations under Article VI, recognizing also that arms control progress that strengthens international stability and security also serves the security interests of the United States.

Since the NPT entered into force, in 1970, the United States has pursued negotiations on a broad front of arms control measures, some in the nuclear area, some in areas of other weapons of mass destruction, and some in the conventional area. Progress on arms reductions in the past five years has been unprecedented. For example, the START Treaty, which has entered into force, is already sharply reducing the number of nuclear delivery systems and warheads. Since the 1990 NPT Review Conference these negotiations, most of which had been underway for some time, have yielded major steps forward. In addition to concluding arms control agreements during this five-year period, the United States has taken various unilateral measures to further restrict the deployment and development of nuclear weapons and, together with the Soviet Union, fully implemented an agreement, the Intermediate Nuclear Force Treaty that eliminated an entire class of nuclear delivery systems.

As a result:

--- The nuclear arms race has ended.

--- Significant progress has been made on controlling chemical and biological weapons.

--- Major steps have been taken to reduce and control conventional forces and through controls and confidence and security building measures to reduce the danger of major war breaking out.

The United States has participated in the negotiation of the following arms control agreements and security documents since the Fourth NPT Review Conference in 1990:

Vienna Document of 1990 on Negotiations on Confidence and Security Building Measures

Treaty on Conventional Armed Forces in Europe

Protocol to the Threshold Test Ban Treaty
Protocol to the Peaceful Nuclear Explosions Treaty

Concluding Act of Negotiations on Personnel Strength of Conventional Armed Forces in Europe

Treaty on the Reduction and Limitation of Strategic Offensive Arms (START)

Vienna Document of 1992 on Confidence and Security Building Measures

Treaty on Open Skies

Joint U.S.-Russian Declaration on Defense Conversion

U.S.-Russian Agreement on Safe and Secure Transportation, Storage and Destruction of Weapons

U.S.-Russian Agreement on Disposition of Highly Enriched Uranium from Weapons Dismantlement in Russia

U.S.-Russian (O'Leary-Mikhailov) Joint Statement on inspection of storage facilities for fissile material from dismantled nuclear weapons

U.S.-Belarussian Agreement on Emergency Response and Prevention of Proliferation of Weapons of Mass Destruction

Chemical Weapons Convention

U.S.-Russian Treaty on Further Reduction and Limitation of Strategic Weapons (START II)

U.S.-Ukrainian Agreement on Assistance in Elimination of Strategic Nuclear Arms

U.S.-Kazakhstan Agreement on Assistance in Destruction of Silo Launchers

U.S.-Kazakhstan Agreement on the Purchase of Highly Enriched Uranium

U.S. Russian Agreement and Monitoring Regime for the Shutdown and Conversion of Russian Plutonium Production Reactors

Vienna Document of 1994 on Confidence and Security Building Measures

U.S.-IAEA 1977 Voluntary Safeguards Agreement: a significant extension of safeguards to include fissile material from dismantled U.S. nuclear weapons

The list alone cannot fully convey the radical transformation in international security affairs. Some of the agreements already concluded in the past five years as well as several that are currently being negotiated deserve further explanation.

Nuclear Weapons

The Strategic Arms Reduction Treaty (START) was signed by the United States and the Soviet Union in 1991. Under the Lisbon Protocol of May 1992 Belarus, Kazakhstan and Ukraine agreed to become parties to START and to become parties to the NPT as non-nuclear weapon states. On December 5, 1994 at the Budapest CSCE (OSCE) Summit meeting the heads of state of all five parties exchanged instruments of ratification, bringing START into force.

START will reduce strategic arsenals by approximately one-third. Even before the Treaty entered into force the United States began to dismantle its strategic nuclear weapons. To date the United States has removed all of the warheads on strategic ballistic missiles whose launchers will be eliminated under START.

In addition to destroying its own weapons, the United States is supporting the destruction of such weapons by the other START parties. The United States has committed over $1 billion for programs in Belarus, Kazakhstan, Russia and Ukraine to ensure the safe, secure dismantlement of nuclear and other weapons of mass destruction.

START II was signed in January 1993. The United States and Russia are committed to seek ratification of the Treaty in 1995. Under START II, strategic weapons will be reduced well below START I levels, to 3,000-3,500 warheads each for the United States and Russia by 2003. With full implementation of START II the total U.S. active nuclear stockpile will be reduced by about 79% from the Cold War high. At their

September 1994 meeting in Washington, Presidents Clinton and Yeltsin announced that the United States and Russia would proceed to deactivate all strategic delivery systems to be reduced under START II by removing their nuclear warheads or by taking other steps to remove them from alert status once the Treaty enters into force. Also, the two Presidents instructed their experts to intensify their dialogue to develop concrete steps to adapt the nuclear forces and practices to the changed international security situation, including the possibility, after ratification of START II, of further reductions of, and limitations on, remaining nuclear forces.

In early 1995 a joint US-Russian working group will begin to discuss steps to make the reductions in nuclear warheads transparent and irreversible. These steps could include exchanges of data on aggregate stockpiles of nuclear weapons, on stocks of fissile material, and on their safety and security.

Nuclear Testing and Fissile Material Production Cutoff

Negotiations on a Comprehensive Test Ban Treaty (CTBT) began at the Conference on Disarmament (CD) in January 1994. The importance the United States attaches to these negotiations was highlighted by a message from President Clinton to the first plenary meeting of the CD in 1994. In that message, President Clinton reiterated the US commitment to negotiate a CTBT "at the earliest possible time." The President also stated that of all of the items on the CD agenda, "none is more important than the negotiation of a comprehensive and verifiable ban on nuclear explosions." The United States has played a leadership role in the negotiations. The United States believes that in the aftermath of the Cold War the risks of proliferation continue to present significant threats. A CTBT is vital to efforts to constrain both horizontal and vertical proliferation and further development of nuclear weapons and to ensure a more secure and peaceful planet.

In the meantime, the United States continues its nuclear test moratorium, which began in October 1992. President Clinton has extended the U.S. moratorium until a CTBT enters into force or September 1996, whichever comes first.

The United States is also seeking a global ban on the production of fissile materials for nuclear weapons or other nuclear explosive devices. We hope that negotiations will begin in Geneva in 1995.

Other Weapons of Mass Destruction

The United States signed the Chemical Weapons Convention (CWC) on January 13, 1993, the day the Treaty was opened for signature in Paris. This important treaty, negotiated at the CD in Geneva, will eliminate on a global basis an entire category of weapons by prohibiting the production of chemical weapons and requiring the destruction of all existing stocks of chemical weapons within ten years after the entry into force of the Treaty. In this respect, the CWC is both a disarmament treaty and a nonproliferation treaty. Once the Russians agree to the protocols associated with the June 1990 U.S.-U.S.S.R. agreement on chemical weapons destruction and non-production, both sides will be required to forego production of chemical weapons and to destroy the bulk of their stockpiles.

The United States supports efforts now underway to strengthen the Biological Weapons Convention (BWC). To enhance compliance with the BWC, President Clinton announced that the United States will promote new measures to increase transparency of activities that could have biological weapons applications. A Special Conference of states parties to the BWC took place in Geneva in September 1994. The Special Conference mandated the establishment of an Ad Hoc Group to draft a legally binding instrument to strengthen the BWC.

Conventional Forces

Negotiated within the framework of the Conference on Security and Cooperation in Europe, predecessor to the present Organization on Security and Cooperation in Europe (OSCE), the Treaty on Conventional Armed Forces in Europe (CFE) was signed in November 1990. This Treaty reduces and sets ceilings from the Atlantic to the Ural Mountains on key armaments essential for initiating large scale offensive operations. Such armaments include tanks, armored combat vehicles, artillery, and combat aircraft and helicopters. The Treaty entered into force in July 1992 and now includes 30 parties.

The CFE agreement was augmented in 1992 by a follow-on agreement (CFE 1 A) among the parties to declare national limits of the personnel strength of their conventional armed forces.

The United States has also concluded agreements on confidence and security building measures and transparency, also negotiated within the framework of the CSCE (OSCE).

The Vienna Document of 1994, which incorporates the 1992 Vienna Document, identifies a wide range of measures that increase the transparency of military forces and places various constraints on military activities. The 1994 Document also expands the area of application for some measures from Vancouver to Vladivostok.

The Treaty on Open Skies, signed by the US in 1992 and ratified in 1993, commits the United States and other parties in Eurasia and North America to permit, on a reciprocal basis, overflights of their territory by unarmed observation aircraft in order to strengthen confidence and transparency with respect to their military activities. This treaty has not yet entered into force.

The United States is also actively supporting countries in various regions that are interested in applying arms control to regional security problems. Regional arms control has become increasingly important in Africa, the Middle East, Latin America, South Asia, and East Asia and the Pacific.

Finally, President Clinton stated in his September 1994 address to the United Nations General Assembly that the United States will seek international agreement to reduce the number and availability of antipersonnel land mines -- currently estimated at about 85 million -- with a view toward the eventual elimination of such weapons.

Concluding Comments

The United States has pursued arms control negotiations for many years because it seeks a more stable international security environment. Moreover, we believe that in undertaking these negotiations the United States has complied with its obligations under Article VI of the NPT.

Results rarely come quickly. Seldom are the tasks entirely finished. Rather, it should be recognized that arms control is a continuous process. A number of the agreements that have been concluded in the last five years, for example, are built upon earlier agreements and negotiations. Strategic arms limitation negotiations between the United States and the Soviet Union began in 1969. Efforts to reach an international agreement to end nuclear tests began in 1955. President Eisenhower first proposed an "open skies" agreement in 1955. The first international agreement on chemical weapons was concluded in 1925.

There is still progress to be made, such as conclusion of the Comprehensive Test Ban Treaty and the Fissile Material Production Cut-Off Treaty. Once these agreements are achieved, the international security environment will be more stable and secure. Even then, the arms control agenda will not have been completed.

No one can predict when the time will come when further negotiations on arms control may no longer be necessary. One thing is clear, however: An NPT of undiminished vitality is vital for productive arms control negotiations to continue into the future.

APPENDIX A

Article III - Safeguards

U.S. CONTRIBUTIONS TO IAEA SAFEGUARDS

U.S. SUPPORT PROGRAM

The United States Support Program to IAEA Safeguards consists of several elements: (1) the Program for Technical Assistance to IAEA Safeguards (POTAS), (2) the Department of Energy's International Safeguards Program, and (3) technical support activities of the Department of State, Department of Defense, the Nuclear Regulatory Commission, and the Arms Control and Disarmament Agency. At the present time, the U.S. Support Program includes substantial assistance to the IAEA Programme 93+2. The sections that follow illustrate the various categories of the U.S. Support Program (USSP) by describing in some detail tasks which are currently in progress.

PROGRAM FOR TECHNICAL ASSISTANCE TO IAEA SAFEGUARDS (POTAS)

The U.S. program for technical assistance to the International Atomic Energy Agency (IAEA) was initiated following a proposal by U.S. President Gerald Ford in February 1976. The primary purpose of POTAS is to transfer technology available in the U.S. to enhance the effectiveness and efficiency of IAEA safeguards.

Historical effort prior to 1990

POTAS has contributed in many ways to the development and implementation of IAEA safeguards. In the early years, the emphasis was on research and development of equipment and safeguards approaches. Soon thereafter, POTAS added assistance in the areas of system studies, evaluation, computerized information treatment, training of IAEA staff and deployment of equipment for field use. More recently, support in the procurement, use and maintenance of equipment has been given additional emphasis. Thus, POTAS should be seen as broad technical support for IAEA safeguards and has gone beyond the areas of equipment, instruments and techniques because of the IAEA's wider needs. Consistent with its history, POTAS helps the IAEA to identify new needs, and methods, for improvement and remains responsive to IAEA requests.

POTAS has assisted and encouraged an improvement in the IAEA's internal process for identifying needs; specifying requirements for research, development and implementation

support; assigning priorities and time-scales; following up on progress; and integrating the results into routine safeguards implementation. This led in 1992 to an integrated program, approved in the IAEA Department of Safeguards, of research, development and implementation support which includes almost all of the requirements of the program for strengthening IAEA safeguards as given in Programme 93+2.

In general, the provision of Cost-Free Experts (CFEs) is one of the key contributions by POTAS which has a major impact on the IAEA's performance. These CFEs are a diversified group of technical experts whose overall contributions are so significant they deserve special mention. Their impact results generally by POTAS providing the right person, at the right time for important IAEA needs. Although they cannot carry out IAEA inspections under safeguards agreements, they are used by the IAEA to address important issues and often directly assist the inspectors in Vienna and in the field. The highly diversified group of technical experts cover a range of IAEA needs, including non-destructive assay (NDA) techniques, training, management procedures, evaluation methods, quality assurance, data processing, creating specialized software, and specific knowledge needed for safeguarding major new facilities such as nuclear fuel enrichment and reprocessing plants. The CFEs have performed vital functions of the Agency's regular safeguards support staff, because of the severe budget limitations of the IAEA due to the zero-growth budget restrictions and to the non-payment of assessments by some States. Some of the details of the contributions by CFEs are included in the discussion below about the impact of POTAS on IAEA performance.

Equipment and instruments

CFEs provided by POTAS have had a major impact on the development, deployment, use and maintenance of equipment. Most of the work of the sections responsible for development and maintenance is made possible by such CFEs, and much of the work is done by them. Currently, they are used extensively for writing and getting approval of the procedures for operating equipment for NDA and for containment and surveillance (C/S) and for producing tailored software needed by the IAEA for its use of instruments. In addition, the CFEs are playing a major role in supporting the deployment of the Modular Integrated Video System (MIVS) which is an essential part of the IAEA's program to replace world-wide the film-based surveillance systems for which film and spare parts can no longer be easily purchased.

The specification, development and prototype production of MIVS were essential efforts provided by POTAS. Early production of field units, acceptance testing and feed-back for design changes and further production were accomplished with the support of POTAS. The process was the most thorough and provided valuable lessons. More than 150 MIVS units were installed in the field as of the end of 1993 and are a major element of IAEA surveillance world-wide.

To aid in the major effort of reviewing the large number of surveillance images, POTAS funded the development of an automatic reviewer, called MARS, which the IAEA acceptance tested in early 1994.

POTAS also provided important help leading to completion, deployment and use of Core Discharge Monitors (CDMs) at certain nuclear power reactors. Such help also led to the IAEA's use of "flow monitoring" at important nuclear installations in Japan and DPRK. POTAS help was in the form of both hardware and software.

POTAS also provided essential support for the development and use of tamper-indicating seals. Most recently the COBRA seal has been completed. The COBRA seal is now used in places which have conditions too extreme for the extensively used seals previously perfected by POTAS for normal conditions. An automatic , computer-based verifier to be used for verifying COBRA seals in the field is being developed by POTAS and was ready for field tests at the end of 1994.

In general, POTAS has been able to design equipment for both generic and specialized applications. This has involved both industry and DOE laboratories. Examples of current on-going POTAS tasks include:

1. Software Upgrade of COLLECT and REVIEW for PFPF. The software upgrade for the computer codes COLLECT and REVIEW was installed at the Plutonium Fuel Production Facility (PFPF) (Japan) in late 1993. Some minor adjustments were made in early 1994. The software allows an efficient review and verification of material flows within the facility.

2. Design and Fabrication of Facility Specific Detectors. A fuel flow monitoring system was fabricated and has been installed at the Tokai-1 reactor in Japan.

3. Advanced Methods in Surface Ionization Spectrometry. Research on advanced methods for application to specific IAEA sample measurement problems to improve the accuracy of mass spectrometry has been completed, and a report identifying

further work has been produced. The effort is needed to improve the IAEA's precision and accuracy for meeting high scientific standards and goals. The first Phase report on the technique is completed (ISPO-361, Evaluation of the Total Evaporation Method for Mass Spectrometry Analysis). The effect of impurities in the application of the technique is being extensively investigated.

4. Neutron Coincidence Counter for Scrap Materials. An instrument was provided to the IAEA which uses the concept of measuring higher neutron moments from fissions besides the singles and doubles. The added information allows the more precise measurement of plutonium content of a sample when the sample is not in the ideal condition; e.g., measurement of scrap contaminated by moisture or impurities (ISPO-349, Plutonium Scrap Multiplicity Counter Operation Manual).

5. Provision of Cascade Header Pipe Enrichment Monitor (CHEM). LANL has completed the collimator design of the CHEM for use at Rokkasho. Martin Marietta Energy Systems (MMES) has completed the fabrication of standards for calibrating the CHEM.

6. Spent Fuel Rod Counter. An instrument was developed for measuring the discharge of spent fuel rods from on-line loading reactors. The instrument operates continuously in an unattended mode. It is similar to fuel flow monitors at Monju and Joyo which use the GRAND instrument with COLLECT and REVIEW software.

7. Verification of Research Reactor Operating History and Spent Fuel. A neutron and gamma measuring instrument was developed for determining the integrated operating history of fuel elements from research reactors. This device is similar to the ION-1 "FORK" detector developed for use with LWR spent fuel assemblies but is customized for use with research reactor fuel. High resolution gamma spectroscopy measurement for analyzing burn-up and cooling time is also a component part of the instrument. The instrument was fabricated and delivered to the IAEA, along with a user's manual (ISPO-355, Research Reactor Fork User's Manual). IAEA staff were trained in its use.

8. Techniques to Maintain Continuity of Knowledge of SG Items Inside Glove Boxes. A prototype system was developed and was demonstrated at the IAEA in 1991 and in Japan in early 1992. A final report has been issued to the IAEA for use in evaluation of the alternatives (ISPO-357, Techniques to Maintain Continuity of Knowledge of Safeguard Items Inside Glove Boxes).

9. Valve Monitors for Continuity of Knowledge. The effort of determining flow control in a valve was documented in a final report issued in December 1993 (ISPO-358, Valve Monitors for Continuity of Knowledge - Chronological History).

10. Unattended Verification of Volume Measurement and Sampling of Tank Solution. MMES reported on the necessary probes needed for the various measurements (ISPO-345, Unattended Verification of Volume Measurements and Sampling of Tank Solutions). The IAEA has proposed a possible demonstration implementation at some test facilities as the next step in finding methods acceptable to their needs which minimize facility impact.

11. Individual Sample Vial Containment. A secure sample vial container was developed by SNL to assure continuity of knowledge of the sample from the sampling process to the analysis (ISPO-362, Sample Vial Secure Container (SVSC)). A vulnerability test on mass produced mold injected sample containers took place in April 1993 and identified certain areas of improvement which will be addressed; i.e. the seal will be more robust. There is a need to provide more convenient closing and opening devices once the SVSC has proven acceptable.

12. Generic Video Review Station. Video review stations were evaluated in 1994 by the IAEA. The IAEA requested further specific development of production prototypes of MIVS Advanced Review Stations (MARS). Three stations were delivered in November 1993 and were acceptance tested in early 1994. The IAEA purchased 15 MARS units. A formal training course was developed, and the units were in use at the end of 1994.

13. MIVS Manufacturer Support System. POTAS has funded the continuing support of the MIVS manufacturer to aid the implementation of MIVS by the IAEA. Design improvements have been incorporated, and continued testing of all components in order to assure reliability is being supported.

14. Autocobra Image Verifier. A compact, computer-based automatic in-field verifier for the COBRA seal was engineered and was demonstrated to IAEA staff in March 1994. An instrument suitable for field testing was supplied at the end of 1994.

15. GEMINI - A One Channel Digital Image Surveillance System. Robust system control software is being engineered for a digital surveillance system using commercially available components. It will be completed in 1995 and will provide the advantage of digital data for surveillance analysis, remote data transmission and low power consumption.

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Systems studies

POTAS tasks for systems studies have assisted the IAEA in producing generic safeguards approaches and then evolving to facility-specif : applications. This evolution corresponded to the IAEA's changing needs and permitted both generic and facility-specific problems to be addressed. At the same time, some problems which first arose in connection with specific facilities have been expanded into system studies which treated the problems explicitly and systematically.

Important examples of this work include: an analysis of diversion paths and development of model safeguards approaches for the facility type; explanatory notes and examples of how the State should complete the IAEA's design information questionnaire; guidelines for practical implementation of elements of the State's System of Accounting and Control (SSAC) at particular facilities; and calculations of the possible amounts of unreported plutonium which could be produced at specific reactors.

Important work on generic topics include: various studies on the possible extension of randomization to other applications in IAEA safeguards as part of efforts to reduce IAEA costs; development of methodologies for assessing and evaluating the effectiveness of IAEA safeguards; and strategic planning, including an associated plan for medium-term actions by the department of safeguards.

In addition, system studies support to inspectors for implementation of complex safeguards approaches at certain major facilities were greatly assisted by CFEs with a direct and important impact on the effectiveness of safeguards at these facilities. Examples of on-going POTAS tasks on systems studies include:

1. NRTA Software Package. The U.S. has worked cooperatively with Germany to effect a statistical package of software which will ease the inspector's task of obtaining more timely analyses of NRTA data (ISPO-343, Theoretical Framework for Sequential D/MUF-D Analysis). The software package was given an initial field test by IAEA staff cooperatively in Japan at the Tokai Reprocessing Plant in early 1994.

2. Guidelines for Large Reprocessing/Conversion Plant (NRTA) Safeguards Design Specification. A draft report has been issued that describes hardware options available in commercially distributed control data/logging systems which would be valuable for an NRTA approach to reprocessing plant safeguards. The details about the required software capabilities

to effect NRTA were addressed. A draft report, In-Plant Safeguards Information Systems for Large Reprocessing/Conversion Facilities: Preliminary Design Considerations, was issued in January 1994.

3. Field Testing of SNRI for Inventory Change Verification at an LEU Fuel Fabrication Plant. POTAS supported a test of short notice random inspections (SNRI) using an inventory mailbox concept at a U.S. LEU fuel fabrication plant. The test demonstrated the validity, technical feasibility and effectiveness of this approach for verifying the uranium hexafluoride inputs and the product fuel assemblies. The test has been completed, and the preliminary results were presented at the IAEA March 1994 Symposium. POTAS supported a detailed analysis of the test, and the final report was provided to the IAEA at the end of 1994.

4. Expert - Future Directions and Approaches of IAEA Safeguards. An expert reported to the IAEA in May 1994 to work on various safeguards approaches being investigated by the Department of Safeguards.

5. Safeguards on Enrichment Plants - Gaseous Diffusion and Others. This task was recently undertaken to provide the IAEA the knowledge base by which to formulate safeguards approaches for such plants.

6. Safeguards for Final Disposal of Spent Fuel. The U.S. has agreed to support "Design Specification for Inventory Verification for Spent Fuel Conditioning Plants." The U.S. has also agreed to chair the Technical Coordinating Committee which will coordinate the activities of Member States participating in the task.

Training

CFEs provided for training at the IAEA in the use of NDA equipment, computers and for other specialized training have been essential for the success of the training of IAEA inspectors and other professional staff in the Department of Safeguards. Training in the U.S. on NDA equipment has been used extensively by the IAEA to ensure effective use of such equipment, which is of major importance in safeguards performance at facilities handling bulk nuclear material. Twenty-seven training courses have been arranged so far. In addition, training on inspection activities for selected types of nuclear facilities has had a major impact on preparations for effective safeguards performance at important facilities, e.g., five training courses have been arranged by POTAS on enrichment technology.

In-field training on verification of a physical inventory (PIV) at selected types of facilities has greatly assisted the IAEA. A series of PIV training exercises was held under POTAS at U.S. facilities. The PIV exercises continue to be held at U.S. facilities, and one has recently been held at a European location. This progression is an excellent example of a POTAS effort stimulating assistance by other States, thereby increasing the cost-effectiveness of the U.S. program. Examples of on-going current POTAS tasks in the area of training and procedures include:

1. Verification Methods in Diffusion Enrichment Plants. POTAS has supported the familiarization 16 IAEA staff on diffusion plant safeguards techniques through lectures and tours at two U.S. diffusion plants, K-25 (non-operating) and Portsmouth (operating). Techniques for hold-up measurements and in-line inventory determinations are being developed and will be provided to the IAEA.

2. Cost-Free-Expert - Clean Laboratory. A CFE began a 2-year appointment at the IAEA in April 1994. The expert will work with IAEA staff at SAL in assuring the proper construction and commissioning of the Clean Room Laboratory for analyzing environmental samples.

3. Measurement Procedures and Training. POTAS has supported the development, testing, and writing of an extensive number of material measurement procedures. A CFE is provided to organize and manage the production of IAEA measurement procedures by outside consultants. The expert also writes many of the individual procedures in conjunction with IAEA staff when the procedure is needed on a priority basis. Final evaluation review and approval of the procedures are done by IAEA staff before acceptance by the Department of Safeguards. The external part of the task is complete, but the expert provides needed maintenance of existing procedures as well as writing new procedures. Relevant reports include: ISPO-276, Procedures for PuO Field Measurements with an HLNC-II; ISPO-308, Field Measurements in Support of Enrichment Measurement; Procedures Development for Type 30-B UF6 Cylinders; ISPO-309, Test of PMCN Procedures for UF6 Measurements (SG-NDA-13) at Portsmouth Gaseous Diffusion Plant; and ISPO-320, Test of Measurement Procedures for the IAEA 40-Watt Bulk Plutonium Calorimeter BPAC-40 (SG-NDA-14) at the PERLA Facility of the JRC, Ispra.

4. PIV In-Field Training Exercise. POTAS supports the IAEA on a continuing yearly basis in training of inspectors in advanced measurement techniques on plutonium at EURATOM (ISPRA) and other Member State's facilities (e.g., Sellafield in the UK).

5. Cost Free Experts. POTAS supports the in-house training of IAEA staff with CFEs who are especially qualified in training required by the IAEA on instruments needed for inspection verifications.

6. Training for Enhanced Observational Capability. The U.S. is pursuing a multiphased investigation to define the performance skills required by inspectors to detect undeclared nuclear activities. A concept paper has been prepared (ISPO-356, Concept Paper: Knowledge Acquisition Skills Training for Enhanced IAEA Safeguards Inspections. A pilot course is being developed, and at least two full training courses are planned by April 1995.

Information processing and miscellaneous tasks

A big success has been POTAS involvement in the initiation in 1987 and subsequent support of moving the IAEA toward wide area and local area networks using various computer platforms. Examples of POTAS tasks in information processing and other miscellaneous tasks are:

1. Consultants. Several consultants have been supplied to the IAEA who provide expert aid to the IAEA in statistics, data evaluation, and safeguards activities planning. These services are supplied both on a one-time basis as well as on a continuing series of short-term consulting periods and include ISPO-227, Direct Transmission of Safeguards Information; ISPO-233, Secure Process Data Collection for IAEA Safeguards: Preliminary Conceptual Design; and ISPO-321, A Quality Assurance System for Nuclear Material Transfer Accounting.

2. Experts - Software Programming. Several CFEs have been provided to develop software for use by inspectors in the field to improve the timeliness of inspection evaluations.

3. Authentication of the NRTA Data Collection System Through Correlation Analysis. Various advanced mathematical methods of analysis are being investigated as possible aids to analyzing NRTA data for reprocessing plant safeguards. A draft report has been given to the IAEA for review.

4. Authentication of Operator Process Monitoring Systems. This task will determine whether techniques evaluated previously in another task can be used in an existing plant. While not a joint task, there will be indirect cooperation with the Japanese Assistance Program for Agency Safeguards (JASPAS) through a task which they have agreed to do for the IAEA involving data collection and monitoring of the product tanks at Tokai Reprocessing Plant.

5. Expert - Local and Wide Area Networks. This new task will provide a CFE to provide expertise in the use of computer networks.

6. Expert - Information Systems Advisor. This new task will provide a CFE to advise the IAEA on the various information data bases available and how to integrate access to the data bases into current IAEA software and approaches.

7. Expert - System Integration. This new task will provide a CFE to assist the IAEA in seamlessly integrating all IAEA computer platforms (main-frame, Sun, RISC and PCs) for more efficient data transfer and analysis.

8. Expert - Development, Implementation, Evaluation of a QA System. POTAS supports IAEA efforts to implement quality assurance techniques and procedures throughout the Department.

9. Expert - Analyst/Programmer for SMIS. A CFE replacement for a previously completed POTAS task is being supported by POTAS. The expert reported to the IAEA in June.

10. Recruitment of U.S. Candidates. The U.S. supports IAEA recruitment of staff by providing information booths at ANS and INMM meetings in the U.S.

11. Special IAEA Safeguards Staff Travel. POTAS supports IAEA approved non-task related travel by IAEA staff. These trips are useful for enhancing IAEA staff interaction with the technical community prior to deciding on a task request.

DOE INTERNATIONAL SAFEGUARDS PROGRAM

In addition to providing most of the technical input for the POTAS program, the United States Department of Energy (USDOE) has an International Safeguards Program which provides critical technical assistance on a mutually cooperative basis to countries and international organizations to enhance capabilities to control and verify nuclear material inventories. Bilateral and multilateral arrangements have been developed to exchange technology and information for the improvement of safeguards.

In addition to technical support to the IAEA, DOE provides technical support to the United Nations Special Commission (UNSCOM) for inspections in Iraq. Other DOE activities include designing safeguards concepts and strategies, installing inspection and verification equipment to control nuclear materials in countries of the Former Soviet Union, evaluating and deploying new technology for international safeguards to

assist the IAEA, transferring U.S. developed safeguards technology for specific application in unique facilities, providing international training courses for foreign nationals, and operating an international nuclear material tracking system. Indirect support is also provided the IAEA under bilateral safeguards cooperation agreements between DOE and foreign organizations for the development of different safeguard techniques.

The DOE National Laboratories with their high expertise provide the technical basis and infrastructure to implement the DOE International Safeguards Program. Contributions to IAEA safeguards include:

1. Nuclear materials safeguards technology evaluation and implementation;

2. materials control and accountability methodology development;

3. statistical applications to nuclear materials management;

4. improved safeguards information management capabilities such as the Safeguards Information Management System (SIMS);

5. investigation of technical criteria for IAEA safeguards;

6. specialized NDA technology such as neutron coincidence counting systems and a portable multichannel analyzer;

7. evaluation and application of integrated and remote monitoring systems;

8. development of a portable x-ray fluorescence analysis system;

9. evaluation and application of environmental monitoring techniques;

10. a uranium enrichment gamma ray analysis system;

11. intelligent data acquisition and analysis software development; and

12. material integrity verification radar.

The discovery of the clandestine development of undeclared facilities in Iraq has placed greater emphasis on the need for measures to detect undeclared activities. DOE is supporting the IAEA to detect undeclared activities.

NRC CONTRIBUTIONS TO IAEA SAFEGUARDS

The U.S. Nuclear Regulatory Commission (NRC) provides technical support to the IAEA in several areas. This includes:

1. Short Notice Random Inspection (SNRI). The NRC assisted the IAEA in conducting the POTAS-supported SNRI field test at an NRC-licensed low enriched uranium fuel fabrication facility.

2. Computerized Assessment of Safeguards Effectiveness. The effectiveness of a computer program, called "PASE," in evaluating safeguards approaches was assessed by applying it on a test basis to a generic centrifuge enrichment plant producing low enriched uranium. Assessments were made of the diversion paths generated by the PASE program and of the efficiency of the program's analysis of the detectability of these paths by a given international safeguards approach. The large effort required to apply PASE did not seem commensurate with its modest benefits. Recommendations for improving PASE's efficiency were provided.

3. Assessment of Technical Criteria for the Termination of Safeguards on Nuclear Material Contained in Irradiated Waste. This task assessed possible technical criteria for the termination of IAEA safeguards on nuclear material contained in waste from a reprocessing facility and recommended modifications that would increase assurance of the practical irrecoverability of the nuclear material. The results were used in discussions with other countries and the IAEA to establish technically sound criteria for the termination of IAEA safeguards on nuclear materials in waste.

4. Criteria for the Termination of IAEA Safeguards on Material Contained in Waste Streams from Nuclear Facilities. This task is assessing technical criteria for the termination of safeguards on nuclear material contained in waste from other types of nuclear facilities.

5. Adjusted Running Book Inventory Concept to the Head-end of a Large Scale Reprocessing Plant. In response to a request by the IAEA to POTAS, NRC funded a study of the application of the Adjusted Running Book Inventory (ARBI) concept to the head-end (fuel chopping and dissolution) of a hypothetical large reprocessing plant. The study results were

reported to the IAEA in 1993 and showed that ARBI has the potential of increased sensitivity for the timely detection of the loss of plutonium for the head-end area.

6. Refinement of ARBI for Use in the Head-end of Large Reprocessing Plants. An IAEA request for follow-on work to refine the utility of ARBI for meeting IAEA inspection goals in the head-end of a large reprocessing plant is under review. After review and approval, NRC expects to fund the work.

U.S. TECHNICAL ASSISTANCE IN SUPPORT OF PROGRAMME 93+2

The U.S. has undertaken to provide support for Programme 93+2, which was initiated in 1993. U.S. efforts include:

1. Cost Analysis of Present Safeguards Implementation. The U.S. has undertaken an internal study to see if there is any new information we could provide to the IAEA relating to key safeguards parameters.

2. Assessment of Potential Cost Saving Measures. U.S. technical assistance to the IAEA's examination of cost-saving measures predates Programme 93+2. The U.S. has long supported investigation and deployment of a number of advanced technologies, such as unattended NDA and surveillance equipment, as well as remote transmission of NDA, surveillance and other sensor data. The U.S. is supporting the effort for standardized equipment procurement as part of the New Partnership Approach with EURATOM by supporting development of the GEMINI digital surveillance system. The U.S. also continues to provide substantial support to the Safeguards Management Information System (SMIS) as an important administrative measure to maximize effective use of Department of Safeguards resources.

3. Environmental Monitoring Techniques for Safeguards Application. In addition to the field trial at Oak Ridge, the U.S. has provided personnel, equipment, technical expertise, and travel funds for IAEA environmental monitoring field trials in Sweden, Hungary, South Africa, Argentina, and South Korea. The U.S. has also provided $1.5 million for the planning and construction of a Class 100 clean laboratory at the Safeguards Analytical Lab in Seibersdorf for IAEA efforts in environmental monitoring for safeguards. The U.S. has already provided several consultants for this project and is now supporting a CFE to work with the IAEA in the construction and commissioning of this clean room. Finally, the U.S. is providing the IAEA assistance in special analytical procedures for environmental samples. Five U.S. laboratories have been added to the IAEA Network of Analytical Laboratories for performing environmental sample analyses, and training is being provided to the IAEA in analytical methods.

4. Increased Cooperation with SSAC and other Measures for Improving the Cost Effectiveness of Safeguards. Among the relevant investigations supported by the U.S. are randomized inspections across the fuel cycle, short-notice random inspections at LEU fuel fabrication plants and randomization of inspections at LWRs.

5. Improved Analysis of Information on States' Nuclear Activities. The U.S. has provided a consultant to the IAEA to assist in the development of an information analysis methodology designed to make use of both safeguards and non-safeguards information for analyzing States' nuclear activities. This has included development of a proliferation critical path analysis and assessment of all potential information sources. The U.S. has provided a sophisticated multi-media data management system, the International Nuclear Safeguards Inspection Support Tool (INSIST), to be used for enhanced evaluation and assessment of all types of information for safeguards purposes. The U.S. is also supporting the Safeguards Information Management System (SIMS), which provides additional information for management support in the form of advice, training, customized software, and hardware. SIMS is designed to meet IAEA needs and to manage effectively additional information from other enhanced safeguards effort.

6. Enhanced Safeguards Training. The U.S. is assisting the IAEA in developing enhanced observational training as a means to strengthen inspectors' ability to detect inconsistencies with declared activities. The U.S. is also assisting the IAEA in training for environmental sampling and analysis. In addition, the U.S. is examining a variety of other possible training initiatives for application to IAEA safeguards, either as supplements to existing training or as new courses.

CONCLUSION

The United States Support Program provides strong financial and technical support toward the implementation of effective and efficient IAEA safeguards. In the future, with the additional safeguards responsibilities for the "excess" fissile materials from dismantled nuclear weapons, the IAEA will require increased financial and technical assistance support for its safeguards program from its Member States.

APPENDIX B

Article IV -- Peaceful Uses of Nuclear Energy

AGGREGATES 1990-1995

U.S. Voluntary Contributions to IAEA Technical Assistance Fund

1990	$10,654,000
1991	$11,330,000
1992	$12,000,000
1993	$13,875,000
1994	$14,675,000
1995	$15,375,000
TOTAL:	$77,909,000

U.S. Extrabudgetary Funding for IAEA Footnote A Projects

1990	$1,200,000
1991	$1,380,000
1992	$1,404,000
1993	$1,900,000
1994	$2,000,000
1995	$2,000,000
TOTAL:	$9,884,000

U.S. Extrabudgetary Funding for IAEA Fellowships

1990	$1,033,000	23 Fellows Placed and Trained
1991	$1,100,000	29 Fellows Placed and Trained
1992	$1,250,000	64 Fellows Placed and Trained
1993	$1,250,000	96 Fellows Placed and Trained
1994	$1,500,000	
1995	$1,500,000	
TOTAL:	$7,633,000	

U.S. Funded Training Courses

1990	$ 1,772,000
1991	$ 1,751,000
1992	$ 1,623,000
1993	$ 1,850,000
1994	$ 2,000,000
1995	$ 2,000,000
TOTAL	$10,996,000

U.S. Funding for Cost Free Experts

1990	$ 152,000
1991	$ 450,000
1992	$ 450,000
1993	$ 500,000
1994	$ 475,000
1995	$ 800,000
TOTAL:	$2,827,000

SPECIFIC DATA 1990-1993

1990

Recipients of U.S.-Funded IAEA Footnote A Projects: 17

Bangladesh	Korea, Republic of
Colombia	Malaysia
Cote D'Ivoire	Mexico
Ecuador	Nigeria
Egypt	Poland
El Salvador	Portugal
Ghana	Thailand
Greece	Vietnam
Indonesia	

Total U.S. Provided Equipment: $1,434,600

U.S. Provided Extrabudgetary Fund for Technical Cooperation: $1.2 Million, which was 28.6% of the funds received by IAEA for Footnote A projects.

1991

Recipients of U.S.-Funded IAEA Footnote A Projects: 17

Colombia	Malaysia
Costa Rica	Mexico
Egypt	Nigeria
Ghana	Peru
Greece	Philippines
Hungary	Portugal
Indonesia	Romania
Kenya	Yugoslavia
Korea, Republic of	

Total U.S. Provided Equipment: $713,000

U.S. Provided Extrabudgetary Fund for Technical Cooperation: $1.6 Million, which was 24% of the funds received by IAEA for Footnote A projects.

1992

Recipients of U.S.-Funded IAEA Footnote A Projects: 15

Colombia	Malaysia
Costa Rica	Mexico
Egypt	Nigeria
Ghana	Peru
Guatemala	Philippines
Hungary	Romania
Indonesia	Uruguay
Kenya	

Total U.S. Provided Equipment: $1,096,100

U.S. Provided Extrabudgetary Fund for Technical Cooperation: $2.0 Million, which was 40.5% of the funds received by IAEA for Footnote A projects.

1993

Recipients of U.S.-Funded IAEA Footnote A Projects: 19

Bangladesh	Morocco
Colombia	Nigeria
Costa Rica	Peru
Egypt	Philippines
Ethiopia	Romania
Ghana	Slovenia
Indonesia	Tanzania
Kenya	Uruguay
Malaysia	Zimbabwe
Mexico	

Total U.S. Provided Equipment: $5,687,600

U.S. Provided Extrabudgetary Fund for Technical Cooperation: $2.0 Million, which was 30.9% of the funds received by IAEA for Footnote A projects.

APPENDIX C

Article VI: Arms Control and Disarmament

THE RECORD FROM 1970 TO 1995

Since the NPT entered into force on March 5, 1970 the United States has become party to 13 arms control treaties and has signed more than 40 other international agreements and statements. The following information covers the principal arms control commitments undertaken by the US during the first 25 years of the NPT.

Memorandum of Understanding Between the United States and the Soviet Union Establishing a Direct Communications Link

Known more commonly as the "Hot Line," this agreement was signed in 1963 and up-dated three times between 1971 and 1988. Satellite communications with multiple terminals were established by agreement of September 30, 1971, facsimile transmission by agreement on July 17, 1984, and advanced facsimile by agreement June 24, 1988.

Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed

The Seabed Treaty, signed by the United States on February 11, 1971, prohibits the deployment of nuclear and other weapons of mass destruction on the ocean floor or the subsoil. The Treaty entered into force on May 18, 1972.

Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War

The United States and the Soviet signed this agreement September 30, 1971. The agreement calls for cooperation between the United States and the Soviet Union to reduce the risk that accidental or unauthorized action could lead to a nuclear exchange. A Common Understanding of June 14, 1985 clarifies several terms used in the Agreement.

Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and Their Destruction

The United States ratified the BWC January 22, 1975. The Convention prohibits parties from developing, producing, stockpiling, or acquiring biological and toxin weapons and their means of delivery. At the Third BWC Review Conference in September 1991 the participating states parties recognized the need to strengthen the implementation of and compliance with the Convention. The Conference mandated the establishment of an ad hoc group of government experts (called VEREX) to identify and examine potential verification measures. The Ad Hoc Group's report to the BWC states parties was discussed at a Special Conference in September 1994. The Special Conference mandated the establishment of an Ad Hoc Group to draft a legally binding instrument to strengthen compliance and enhance transparency of the BWC. The draft instrument will be submitted for consideration to the Fourth Review Conference in 1996. The United States supports measures that will strengthen the BWC.

Agreement Between the United States and The Soviet Union on Preventing Incidents On and Over the High Seas

This agreement calls for cooperative measures to reduce the risk of naval conflict due to accident, miscalculation or communication failure. It was signed May 25, 1972.

SALT I Agreements

Two major strategic arms control agreements were signed at the Moscow Summit May 26, 1972. The Interim Agreement on Offensive Weapons and the ABM Treaty were the first agreements the United States and the Soviet Union concluded that limited the deployment of strategic nuclear weapons. Both agreements recognized the principle of national technical means of verification and established the Standing Consultative Commission for both sides on a regular basis to consult on implementation.

Interim Agreement between the United States and the Soviet Union on Limitations of Strategic Weapons

The Interim Agreement, in force for five years, limited future US and Soviet future deployment of inter-continental ballistic missile (ICBM) launchers, submarine-launched ballistic missile (SLBM) launchers, and ballistic missile submarines.

Anti-Ballistic Missile Treaty

The ABM Treaty limited each side to two anti-ballistic missile deployment areas, one of which could be centered at the nation's capital and the other at an ICBM site. Interceptors and radars for both sites were limited as was testing and development. For example, sea-based, air-based, space-based, and mobile land-based systems and components are prohibited. At the Moscow Summit on July 3, 1974 President Nixon and General Secretary Brezhnev signed a protocol to the ABM Treaty, reducing the permitted ABM sites to one each. Other Protocols (July 1974 and October 1976), an Agreed Statement (November 1, 1978), and a Common Understanding (June 6, 1985) clarify and regulate various aspects of implementation of the Treaty. The United States does not have an operational ABM site.

Agreement Between the United States and the Soviet Union on the Prevention of Nuclear War

This agreement, signed at the Washington Summit June 23, 1973, specifies actions that the US and USSR should take to avoid the risk of nuclear war.

Threshold Test Ban Treaty

The United States and the Soviet Union signed the Threshold Test Ban Treaty (TTBT) July 3, 1974 at the Moscow Summit. Underground nuclear tests may be no greater than 150 kilotons. A protocol specifying additional verification provisions was agreed to June 1, 1990, and the TTBT entered into force December 11, 1990.

Helsinki Final Act

The Concluding Document of the Conference on Security and Cooperation in Europe (CSCE) was signed by President Ford and 34 other heads of government on August 1, 1975. The Helsinki Final Act includes a number of confidence-building measures. such as notification of major military exercises (more than 25,000 troops) and invitations to observers.

Peaceful Nuclear Explosions Treaty

The United States and the Soviet Union agreed on May 28, 1976 on conditions that govern any nuclear explosions for peaceful purposes, that is explosions that take place outside weapon test sites established under the TTBT. Individual explosions are limited to 150 kilotons. As in the case of the TTBT, a verification protocol, agreed June 1, 1990, enabled the PNET to come into force December 11, 1990.

Environmental Modification Convention

The United States signed the Environmental Modification Convention May 17, 1977. The Treaty prohibits the hostile use of environmental modification technologies that result in widespread, long lasting or severe effects on any other party.

United States - IAEA Safeguards Agreement

The US-IAEA Safeguards agreement, concluded November 18, 1977, permits the IAEA to apply safeguards to all special fissionable material in all facilities in the United States except those with direct national security significance. The Agency selects the particular facilities in which it wishes to apply safeguards. The agreement entered into force December 1980.

Treaty Between the United States and the Soviet Union on the Limitation of Strategic Arms (SALT II)

The SALT II Treaty went beyond the SALT I Interim Agreement in several respects. First, it included all strategic delivery systems, heavy bombers as well as ICBMs and SLBMs. Second, it established equal ceilings for both the United States and the Soviet Union. Third, it placed limits on missiles with multiple warheads.

The Treaty set overall limits for all strategic delivery systems (ICBMs, SLBMs, heavy bombers, and air-to-surface ballistic missiles) at 2,400. Delivery systems with multiple warheads were limited at 1,320, and a sublimit for MIRVed ICBMs was set at 820. In addition, the number of warheads that could be carried on both ICBMs and SLBMs could not be increased beyond the maximum then carried; ICBMs could carry no more than 10 warheads, SLBMs no more than 14.

Limitations were also placed on future development and deployment. For example, modernization was restricted, limits were established for certain kinds of testing, relocation of launchers was prohibited, new fixed ICBMs were prohibited, and light ICBMs could not be converted to heavy missiles.

Altogether, the SALT II agreement reflected some of the objectives of SALT I, in particular, the desire to limit future development and deployment of the most destabilizing strategic weapons. The Treaty never actually entered into force, but during the time of its intended duration the United States complied with its limitations.

Convention on Physical Protection of Nuclear Material

The United States signed the Physical Protection Convention March 3, 1980. This Convention specifies measures to protect shipments of nuclear materials and also specifies actions to be taken in case of theft.

Nuclear Risk Reduction Centers

The United States and the Soviet Union agreed September 15, 1987 to establish centers that could communicate directly with each other in order to notify the other side about launches of ballistic missiles.

Intermediate-Range Nuclear Forces Treaty

The INF Treaty was signed by the United States and the Soviet Union at the Washington Summit on December 8, 1987. When negotiations began, in 1982, the immediate concern was about deployment of intermediate-range missiles in Europe. What emerged from the negotiations, however, was a global ban of this missile category by the US and the USSR. INF eliminated an entire category of nuclear delivery systems by prohibiting deployment and requiring the destruction of the missiles, launchers, and support equipment. The Treaty also established a verification regime with unusually intrusive measures.

All US and Soviet ground-launched intermediate-range missiles (1,000 km to 5,500 km) and all ground-launched shorter range missiles (500 km to 1,000 km) are banned under the Treaty. The ban applies to cruise missiles as well as ballistic missiles. All missiles, launchers, support structures, and equipment were destroyed. Flight testing of such systems was prohibited.

Verification measures include exchanges of data, on-site inspections of facilities and of destruction, and for the thirteen-year period of Treaty verification continuous on-site monitoring at the two former production facilities for INF systems, one in the United States and one in Russia. The Special Verification Commission was established by the Treaty to deal with compliance and implementation concerns.

All destruction required by the Treaty was completed by June 1, 1991.

CSCE Stockholm Document

The United States, along with all other CSCE members, agreed on September 19, 1986 on certain principles governing military actions. Among other provisions, the Stockholm Document calls upon CSCE members to refrain from the threat or use of force. It also calls for prior notification (42 days) of large-scale military activities (13,000 troops or 300 tanks), set up procedures for observing military activities, and required an annual calendar of military activities that would require prior notification.

Conventional Armed Forces in Europe Treaty

The CFE was concluded November 19, 1990. Negotiated by members of NATO and the former Warsaw Treaty Organization -- although the Treaty applies to individual countries -- CFE places stringent limits on the deployment of conventional weapons systems that would be necessary for major offensive actions in the Atlantic-to-the-Urals (ATTU) Region. These systems are tanks, artillery, armored combat vehicles, combat aircraft, and attack helicopters. Overall limits were set that apply collectively to the members of each alliance: 20,000 tanks; 20,000 artillery pieces; 30,000 armored combat vehicles, 6,800 combat aircraft, and 2,000 attack helicopters.

The Treaty specifies strict procedures covering the destruction of equipment in excess of the limits and provides for a broad, intrusive on-site inspection regime applying both to the process of destruction and to current equipment holdings of each state.

On July 10, 1992 the Heads of State of the CFE parties, by then numbering 29, agreed on further political measures to limit military personnel in the region. National personnel limits were specified and procedures established to revise the figures either downward or upward.

Confidence-and Security-Building Measures in Europe

Building on the implementation of the provisions of the Stockholm Document of 1986, CSCE members undertook new negotiations to elaborate a new set of confidence-and security-building measures to further reduce the risk of military confrontation in Europe. The result of these negotiations, begun in 1989, was the 1990 Vienna Document, later superseded by the 1992 Vienna Document, and, in December 1994, superseded by Vienna Document 1994.

The 1994 Vienna Document provides for an annual exchange of information on forces, equipment and budgets, evaluation visits to determine the validity of exchanged information, expanding contacts among participating states (for example, visits to air bases and demonstrations of new weapons systems), a CSCE communications network, and annual meetings to review implementation. Mandatory notification of military activities is now required for those activities involving over 9,000 troops, a reduction of 4,000 below the level set by the 1986 Stockholm Document.

Strategic Arms Reduction Treaty

Negotiations on this Treaty (START) began in June 1982 and concluded at the Moscow Summit on July 31, 1991. For the first time ever the United States and the Soviet Union agreed to substantial reductions of strategic nuclear offensive arms, roughly 30-40% overall, and up to 50% in the most threatening systems.

The breakup of the USSR at the end of 1991 meant that three newly independent states in former Soviet Union besides Russia -- Belarus, Kazakhstan, and Ukraine -- had strategic offensive arms deployed on their territory. The Lisbon Protocol of May 23, 1992 specified the means by which these three states and Russia would become parties to START. Furthermore, Belarus, Kazakhstan, and Ukraine are committed by the Protocol to eliminate all nuclear weapons and all strategic offensive weapons from their territories within the seven year Treaty reduction period. They also agreed to join the NPT as non-nuclear weapon states.

At the CSCE Budapest Summit on December 5, 1994 the five Heads of State exchanged instruments of ratification, bringing START into force.

START limits the United States and the former Soviet Union to 1600 strategic nuclear delivery systems capable of carrying 6000 warheads (with a sublimit of 4,900 for ICBMs and SLBMs).

Reductions are to take place in three phases over the course of seven years. The United States has budgeted substantial funds to support dismantlement in Belarus, Kazakhstan, Russia, and Ukraine.

United Nations Register of Conventional Arms

The UN Register was adopted by the UN General Assembly on December 9, 1991. UN members states are requested to provide to the Register data on certain categories of arms exported or imported. The United States has complied with the request.

U.S.-Russian Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II)

Less than two years after Presidents Bush and Gorbachev signed START I Presidents Bush and Yeltsin signed START II on January 3, 1993. START II will require that by the year 2003 the United States and Russia each will deploy an aggregate number of warheads on ICBMs, SLBMs and heavy bombers of no more than 3,500. START II will also eliminate the most destabilizing strategic weapons -- multiple warhead ICBMs and heavy ICBMs -- by the year 2003.

On September 28, 1994, at the conclusion of their Summit meeting, Presidents Clinton and Yeltsin confirmed their intention to seek early ratification of the START II Treaty and expressed their desire to exchange START II instruments of ratification at the next U.S.-Russia Summit meeting.

Open Skies Treaty

The United States signed the Open Skies Treaty March 24, 1992. This Treaty commits parties in North America and Eurasia to permit on a reciprocal basis overflight of their territories by unarmed observation aircraft. This agreement is intended to strengthen confidence and promote transparency, was first proposed by President Eisenhower in 1955. The Treaty has not yet entered into force.

Chemical Weapons Convention

Along with 129 other original signatories, the United States signed the Chemical Weapons Convention (CWC) when it was opened for signature in Paris on January 13, 1993.

The CWC bans an entire class of weapons of mass destruction. Not only does it prohibit use of chemical weapons (also prohibited by the 1925 Geneva Convention on Poison Gas), it prohibits acquisition, development, production, stockpiling, retention, and transfer of chemical weapons. It requires the total destruction of both chemical weapons themselves and their production facilities.

The CWC establishes an elaborate system of verification that governs inspection, including short-notice challenge inspections, and establishes the Organization for the Prohibition of Chemical Weapons to ensure implementation of the CWC. The Treaty will enter into force 180 days after deposit of the 65th instrument of ratification and is of unlimited duration.